

REMARKS

Upon entry of the foregoing amendment, claims 1-113 are pending and remain in the application. The amendment to the claims do not present any new matter. Claims 1, 22 and 70 have been rewritten to include the element that the polyester composition has a T_g of about 10 °C to about 40 °C. Support for this element can be found in the specification generally and specifically in the examples. Claims 20, 21, and 84 have been rewritten consistent with the T_g temperature range given in the corresponding independent claims. Claims 61, 62, 93, 94, 108, and 109 have been corrected to appropriately reflect a polyester film or sheet or a process.

Rejection of Claims 11, 24, 41, 59, 79, 91, and 106 under 35 U.S.C. § 112

The Examiner has rejected claims 11, 24, 41, 59, 79, 91, and 106 as being indefinite due to improper Markush language. Applicants respectfully traverse the rejection. Applicants address Examiner's attention to Example 20 of the MPEP section AI-66 which shows a Markush format identical to that used in the instant claims. As the Markush language of Applicant's claims is consistent with the MPEP Applicants respectfully request that the rejection of claims 11, 24, 41, 59, 79, 91, and 106 be withdrawn.

Provisional Double Patenting Rejection

Applicants assume Examiner intended to provisionally reject Claims 1-113 (not claims 113) under the judicially created doctrine of obviousness-type double patenting as allegedly unpatentable over claims 1-33 of copending Application No. 10/722,870. Applicants respectfully traverse the rejection. Although Applicants disagree with the Examiner's rejection, a Terminal Disclaimer in compliance 37 C.F.R. §1.321(c) is submitted herewith to advance the prosecution of the application. The provisional rejection has thus been overcome and should be withdrawn.

Examiner's comment regarding joint inventors

The Examiner's statement regarding common ownership is acknowledged.

Rejection of Claims 1 – 113 under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1 – 113 under 35 U.S.C. §103(a) over the disclosure of WO 99/47605 to Flynn et al. ("Flynn") in view U.S. Patent 5,534,570 to Shih et al. ("Shih"), U.S. Patent 5,750,605 to Blumenthal et al. ("Blumenthal") or JP-4-117432, and U.S. Patent 6,538,054 to Klatt et al. ("Klatt") or JP-2002-53740, and U.S. Patent 5,998,005 to Kanno ("Kanno") or JP-2000-186191. Applicants respectfully traverse the rejection and the statements made in support thereof.

To establish a *prima facie* case of obviousness, the cited art must suggest to the skilled artisan both the combination or modification alleged to be obvious and that the combination or modification would have a reasonable likelihood of success. See *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991). The cited art also must teach or suggest all of the claim limitations. See *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Here the cited references, considered either individually or in any reasonable combination, neither would have taught or suggested the claimed invention nor would have provided the requisite motivation to combine references.

A representative embodiment of the present invention is given in amended Claim 1 which reads as follows.

1. A flame retardant polyester composition for calendering, comprising:
 - (a) a polyester having a crystallization half time from a molten state of at least 5 minutes wherein said polyester is a random copolymer;
 - (b) a plasticizer;
 - (c) a phosphorus-containing flame retardant miscible with said polyester plasticized with said plasticizer; and

- (d) an additive effective to prevent sticking of the polyester to calendering rolls wherein said polyester composition has a T_g of about 10 °C to about 40 °C.

Applicant's invention teaches that appropriate selection of a plasticizer and flame retardant combination for calendering a polyester will depend upon the particular polyester, plasticizer, the flame retardant, and the relative quantities of polyester, plasticizer and flame retardant. The preferred range of plasticizer content will depend upon the properties of the base polyester and the plasticizer. [Applicant's application at paragraph 0043] The phosphorous-containing flame retardant may be substituted for a portion or all of the plasticizer component of the polyester composition depending upon the flame retardant's effectiveness as a plasticizer. [Applicant's application at paragraph 0048] The cited references individually or in combination are, at best, only an invitation to try combinations of materials listed in the cited references without any guidance as to the specific combination recited in Applicants' claims.

Flynn discloses a polyester having a crystallization half time from a molten state of at least 5 minutes and an additive for preventing sticking of the polyester to the calendering rolls. (Page 14, claim 1). Flynn discloses plasticizers and flame retardants generically, without identifying any specific flame retardants or phosphorous-containing flame retardants, in a general list of additives with no particular motivation or guidance to choose any one additive. (Page 7, line 27 to page 8, line 2.) Flynn gives no suggestion for the combination of plasticizers and flame retardants. The examples presented by Flynn contain neither a plasticizer nor a flame retardant, nor the combination of a plasticizer and a flame retardant. (Table 1, page 11; Table 2, page 12). Flynn gives no suggestion that the flame retardant be miscible with a plasticized polyester. Flynn does not disclose T_g of the polyester compositions. Flynn does not disclose a phosphorous-containing flame retardant miscible with a plasticized polyester or that the resulting composition has a T_g of about 10 °C to about 40 °C.

The Shih disclosure does not cure the above deficiencies. Shih fails to disclose many of the aspects of the present invention including: a phosphorous-containing flame retardant miscible in a plasticized polyester or that that the resulting composition has a T_g of about 10 °C to about 40 °C. Shih discloses a polyester having a T_g of 40 °C to 100 °C in combination with a plasticizer that "decreases the T_g of the polyester [composition] by at least 10 °C." (Column 8 lines 48-68). Shih does not disclose a range of T_g for the polyester composition nor does Shih disclose any example with a polyester composition having a T_g less than 42 °C. One skilled in the art has no motivation to combine Flynn and Shih as there is no suggestion as to the desirability to combine Flynn and Shih. To the contrary, Shih teaches away from Applicants' claimed subject matter. Shih refers to "a critical amount of plasticizer." Column 1, lines 63-64. Shih then teaches that the "percentage by weight of the polyester in the polyester/plasticizer blend is 90 to 99%" and more preferably 94 to 98%, i.e., the plasticizer in Shih is preferably two to six percent. Column 4, line 28-31. Applicants' claims 2, 35, 54, 73, 87, and 102 recite plasticizer ranges of about 10 to about 40 wt%. Additionally, Table I of Shih shows that at the 10 wt% highest level of the "critical amount" of plasticizer, Shih fails to produce a polyester composition within Applicants' recited T_g range of about 10 °C to about 40 °C. The combination of Flynn and Shih does not teach or suggest Applicants' claimed subject matter.

Blumenthal in combination with Flynn or the other cited references does not cure the above deficiencies. Blumenthal does not disclose several limitations of the present invention including: a phosphorous-containing flame retardant miscible in a plasticized polyester or that that the resulting composition has a T_g of about 10 °C to about 40 °C. Additionally, the polyester that Blumenthal discloses in claim 1 is a sulfonated polyester. A person of ordinary skill in the art would not look to Blumenthal when addressing the copolymers of the present invention. Blumenthal does not suggest combining diethylene glycol dibenzoate with any polyester other than the sulfonated polyester disclosed. As such, the inventors, at the time of the invention would have had no motivation to combine the Blumenthal patent with the Flynn patent or the Shih patent. Additionally, the Applicants respectfully submit that the Blumenthal patent is not

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analogous art for the purposes of 35 U.S.C. § 103(a). Blumenthal teaches the use of a sulfonated polyester in an adhesive in conjunction with a tackifier, while Applicants' claims recite an additive to prevent the composition from sticking to calendering rolls. Blumenthal, by teaching compositions that adhere to a surface, teaches away from Applicants' claimed subject matter that recites additives that prevent adhesion to the calendering rolls.

JP-4-117432 individually or in combination with Flynn or the other cited references also does not cure the above deficiencies. JP-4-117432 does not disclose a phosphorous-containing flame retardant miscible in a plasticized polyester or that the resulting composition has a T_g of about 10 °C to about 40 °C. JP-4-117432 discloses a listing of generic plasticizers (p. 6-7) well known to one skilled in the polyester art; the listing on pages 6-7 adds nothing over Flynn combined with the knowledge of one ordinarily skilled in the art. There is no motivation or suggestion of desirability to combine JP-4-117432 with the Flynn reference to develop the present invention as claimed. Furthermore, there would have been no expectation of success on combining JP-4-117423 with Flynn since many of the plasticizers disclosed in JP-4-117423 do not work for Applicants' claimed invention as determined by a review of Table 1 in Applicants' specification. For example, JP-4-117423 disclosed trimellitates, but Applicants' Table 1 showed that were not acceptable because they have solubilities of 1, but need a value of 4 or more to be acceptable. Another example, JP-4-117423 (page 7, third paragraph) disclosed three epoxy plasticizers (page 7, second paragraph), two of which are shown in Applicants' Table 1 to be unacceptable. JP-4-117423 provides no guidance with respect to selecting a plasticizer encompassed by Applicants' claimed subject matter. At best, the proposed combination would only be an invitation to try the JP-4-117423 plasticizers.

Adding JP-2002-53740 does not cure the above deficiencies of Flynn or the other cited references. JP-2002-53740 does not teach a resulting polyester composition having a T_g of about 10 °C to about 40 °C. JP-2002-53740 discloses the use of a phosphoric acid ester as a flame retardant. As one of ordinary skill in the art at the time of the invention would have recognized that the flame retardant disclosed in Flynn could

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be a phosphoric acid ester, the JP-2002-53740 disclosed use of phosphoric acid ester as a flame retardant does not add anything to the Flynn reference. Furthermore, an inventor would not have had the requisite expectation of success for combining JP-2002-53740 with Flynn because tributyl phosphate meets the criteria of JP-2002-53740 for a phosphoric acid ester plasticizer, but is not a soluble plasticizer for the present invention; its solubility number does not exceed 3. (Table 1). Because JP-2002-53740 provides no guidance on selecting a phosphoric acid ester plasticizer that would be encompassed by Applicants' claimed subject matter, the proposed combination of references is simply an invitation to try or hind sight analysis based on Applicants' own disclosure, which is not appropriate.

The examples from Applicants' own invention show that an inventor of ordinary skill in the art would not have been motivated to combine Flynn and JP-2002-53740 because the inventor would not have had the requisite expectation of success. Furthermore, JP-2002-53740 combined with Flynn does not teach the present invention, as arranged in applicant's claim 1.

Adding Klatt does not cure the above deficiencies in Flynn or the other cited references. Klatt neither teaches nor discloses the use of a phosphorous-containing flame retardant miscible with a plasticized polyester nor that the resulting composition has a T_g of about 10 °C to about 40 °C. Also, Klatt does not specifically address random copolymers with a crystallization half time of greater than five minutes. The preferred embodiments of Klatt, as well as all of Klatt's examples, are of crystalline polyesters: PET, PBT, a PET / PBT mixture, and polycarbonates. One would not be motivated to combine the disclosure of Klatt relating primarily to crystalline polyesters with the teaching of Flynn on random copolymers. Klatt neither teaches nor suggests the required miscibility of phosphorous-containing flame retardant in the plasticized polyester. Furthermore, Klatt discloses "[e]xamples of fibrous or particulate fillers are carbon fibers, glass fibers, glass beads . . . employed in amounts of up to 50% by weight, in particular up to 40% by weight." (Col 11 lines 43-48). The examples Klatt presents contain 25% to 30% chopped glass fiber. (Cols 13-15). Because glass fibers are incompatible with calendering processing generally, one of ordinary skill in the art would not consider Klatt a relevant reference for a source of improvement for a

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calendering process or composition. Klatt's disclosure would not motivate one of ordinary skill in the art to combine the Klatt reference with the Flynn reference.

Adding Kanno does not cure the deficiencies of Flynn or the other cited references. Kanno neither teaches nor discloses use of a phosphorous-containing flame retardant, the combination of a flame retardant and a plasticizer, nor a flame retardant miscible in a plasticized polyester nor that that the resulting composition has a T_g of about 10 °C to about 40 °C. Kanno claim 9 lists a broad variety of various fatty acid ester lubricants. Flynn discloses "[a]dditives suitable for [preventing the polymer from sticking to the calendar rolls] are well known in the calendering art and . . . examples of such additives include . . . fatty acid amides . . . fatty acids and esters . . . hydrocarbon waxes . . . and ester waxes." (Page 6 lines 14-29). Examiner's citation to Kanno for polyesters and lubricants adds nothing to Flynn in light of the knowledge of one of ordinary skill in the art and provides no guidance to selecting Applicants' recited claim elements. The combination of Kanno and Flynn does not teach or suggest all of recited claim elements, for example, a phosphorous-containing flame retardant miscible in a plasticized polyester in which the resulting composition has a T_g of about 10 °C to about 40 °C.

Adding JP-2000-186191 does not cure the deficiencies of Flynn. JP-2000-186191 neither teaches nor discloses use of a phosphorous-containing flame retardant, the combination of a flame retardant and a plasticizer, nor a flame retardant miscible in a plasticized polyester nor that that the resulting composition has a T_g of about 10 °C to about 40 °C. Although certain phosphoric acid esters and fatty acid esters are found in JP-2000-186191 the combination with Flynn only discloses a broader range of lubricants effective in calendering polyester compositions without providing any guidance to make a selection that would provide all of Applicants' recited claim elements. The combination does not teach the present invention as claimed.

Applicants respectfully submit that the cited art does not show a proper suggestion or motivation to combine references. The "showing of a suggestion, teaching, or motivation to combine prior teachings" must be clear and particular...Broad

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conclusory statements regarding the teaching of multiple references standing alone, are not 'evidence". See *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). Further, there must be a "rational connection between the facts found and the choice made." See *In re Lee* 61 U.S.P.Q. 2d 1430 (Fed. Cir. 2002). Here there is no such rational connection between that which is taught in the cited references and the limitations of the presently claimed invention. Applicants respectfully submit that the motivation stated by the Examiner, that is would be obvious "to add the ingredients of the secondary references to the composition of the primary reference, since they are customarily used with polyesters" could not have motivated a person skilled in the art at the time the invention was made to look to the cited sources of information, to select particular elements, and to combine them to obtain Applicants' claimed invention. Without hindsight analysis based on Applicants disclosure, one of ordinary skill in the art could not have made the necessary multiple selections from the many cited references to reach Applicants claimed subject matter since many of the possible selections based on the cited references would not correspond to Applicants claimed subject matter and the cited references provided no guidance to make the necessary selections.

Finally, because of the lack of a suggestion or teaching of Applicants' invention as claimed, the cited art necessarily could not have provided a reasonable expectation of success. Applicants respectfully submit that neither the disclosure of Flynn nor the disclosure of Flynn combined appropriately with the other cited references renders the present invention obvious under 35 U.S.C. § 103(a). Applicants request, therefore, that the rejection of claims 1 - 113 be withdrawn.

Conclusion

In summary, Applicants believes the application to be in condition for allowance. Accordingly, the Examiner is respectfully requested to reconsider the rejection(s), enter the above amendment, remove all rejections, and pass the application to issuance.

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Karen Taylor
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Date